

SERIAL NO.: 10/666,990

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CLAIM AMENDMENTS

1. (currently amended) A multi-mode scanning imaging system for imaging an object, comprising:

a plurality of sets of optical elements two-dimensional microscope arrays, each set microscope array being disposed with respect to a corresponding image plane and configured to image respective portions of the object;

a scanning mechanism for producing relative movement between the sets microscope arrays and the object to scan the object;

image sensors corresponding to the sets of optical elements adapted microscope arrays for capturing image data representative of the respective portions of the object imaged thereby; and

a mode implementation system for combining the image data captured by said image sensors during a scan of the scanning mechanism;

wherein different microscope arrays in said plurality of microscope arrays are configured to operate according to one or more different desired modes of operation of the imaging system during said scan of the scanning mechanism.

2. (currently amended) The imaging system of claim 1, wherein said sets of optical elements microscope arrays are adapted in conjunction with said scanning mechanism to scan the same portion of the object sequentially and

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image a same area of the object during said scan of the scanning mechanism.

3. (currently amended) The imaging system of claim 2, wherein said image data corresponding to said different sets of optical elements microscope arrays are registered with one another by said mode implementation system.

4. (currently amended) The imaging system of claim 3, wherein said image data corresponding to said different sets of optical elements microscope arrays represent respectively different colors.

5. (currently amended) The imaging system of claim 3, wherein said image data corresponding to said different sets of optical elements microscope arrays represent respectively different object planes surfaces.

6. (currently amended) The imaging system of claim 2, further comprising an illumination system, wherein said optical elements comprise microscope objectives, and wherein different sets of said microscope objectives are adapted to different microscope arrays operate in at least two different modes of microscopy during said scan of the scanning mechanism.

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7. (original) The imaging system of claim 6, wherein said different modes are selected from the group trans-illumination microscopy, epi-illumination microscopy, fluorescence microscopy, and two-photon microscopy.

8. (currently amended) The imaging system of claim 1, wherein ~~said sets of optical elements~~ microscope arrays are ~~adapted in conjunction with said scanning mechanism to scan different portions~~ areas of the object simultaneously during said scan of the scanning mechanism.

9. (cancelled)

10. (cancelled)

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (cancelled)

15. (cancelled)

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16. (cancelled)

17. (currently amended) The imaging system of claim 1, wherein said scanning mechanism comprises a tray and said sets of ~~optical elements~~ microscope arrays comprise discrete modules ~~adapted to be~~ ~~removably supported by~~ said tray.

18. (currently amended) A method for imaging of an object with an imaging system, comprising:

providing for the imaging system a plurality of sets of ~~optical elements~~ two-dimensional microscope arrays, each set microscope array being disposed with respect to a corresponding image plane and configured to image respective portions of the object;

producing relative movement between the sets microscope arrays and the object to scan the object;

capturing image data representative of the respective portions of the object while different microscope arrays are configured to operate according to different desired modes of operation of the imaging system during said relative movement between the microscope arrays and the object; and

combining the image data captured according to ~~one or more~~ said different desired modes of operation of the imaging system.

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19. (currently amended) The method of claim 18, further comprising scanning ~~the a same portion~~ area of the object sequentially with each of said microscope arrays.

20. (currently amended) The method of claim 19, further comprising registering said image data corresponding to different ~~sets of optical elements~~ microscope arrays with one another according to said one or more different desired modes of operation of the imaging system.

21. (currently amended) The method of claim 20, wherein said image data corresponding to different ~~sets of optical elements~~ microscope arrays represent respectively different colors.

22. (currently amended) The method of claim 20, wherein said image data corresponding to different ~~sets of optical elements~~ microscope arrays represent respectively different object planes.

23. (currently amended) The method of claim 19, further comprising providing an illumination system, wherein ~~said optical elements comprise microscope objectives, and wherein different sets of said microscope objectives are adapted to~~ different microscope arrays operate in at least two different modes of

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microscopy during said relative movement between the microscope arrays and the object.

24. (original) The method of claim 23, wherein said different modes are selected from the group trans-illumination microscopy, epi-illumination microscopy, fluorescence microscopy, and two-photon microscopy.

25. (currently amended) The method of claim 18, further comprising wherein said step of producing relative movement comprises scanning different portions areas of the object simultaneously with said different microscope arrays.

26. (cancelled)

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (cancelled)

31. (cancelled)

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32. (cancelled)

33. (cancelled)

34. (currently amended) The method of claim 18, further comprising providing a tray and removably supporting said sets of ~~optical elements~~ microscope arrays as discrete modules by said tray.